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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,429	02/05/2007	Ian Leitch McDougall	GJE004-US	9490
24222	7590	04/28/2009	EXAMINER	
Vern Maine & Associates 100 MAIN STREET P O BOX 3445 NASHUA, NH 03061-3445			FONTENOT, NIGEL RAI	
			ART UNIT	PAPER NUMBER
			3768	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/595,429	<b>Applicant(s)</b> MCDUGALL ET AL.	
	<b>Examiner</b> NIGEL FONTENOT	<b>Art Unit</b> 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 22-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/17/2007</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This action is responsive to the application filed April 19, 2006. The Preliminary Amendment filed April 19, 2006 has been entered. Claims 1-21 have been canceled. Claims 22-40 are now pending.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 22-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 22 recites the limitations "the ampere-turns values" in claim lines 12-13 and "the position" in claim line 11. There is insufficient antecedent basis for these limitations in the claim.
4. Claim 23 recites the limitation "the combined volume" in claim line 3. There is insufficient antecedent basis for this limitation in the claim.
5. Claim 25 recites the limitation "the periphery" in claim lines 2-3. There is insufficient antecedent basis for this limitation in the claim. Further, claim 25 does not positively recite a step in the claim method. Claim 25 also needs grammatical revision.
6. Claim 26 recites the limitation "the coils" in claim line 2. There is insufficient antecedent basis for this limitation in the claim. It is unclear to which coils claim 26 is referring.

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7. Claim 28 recites the limitation "the location" in claim line 4. There is insufficient antecedent basis for this limitation in the claim.

8. Claim 29 recites the limitation "an X axis and/or a Y axis" in claim lines 5-6. It is unclear whether applicant is claiming both X and Y axes or either axes. Proper action is required.

9. Claims 30-33 recite various equations that seem to describe a gradient field in relation to a magnet magnetic field. These claims are indefinite. It is unclear as to what steps applicant is trying to claim with the recited equations as these equations just describe magnetic field relationships. There are also no units or recitation of axes. Claims 30-33 also recite the limitations: "the desired gradient  $G_z$ ", "the  $B_0$  field", "the z direction", "the position", and others. There is insufficient antecedent basis for these limitations. Proper action is requested.

10. Claim 34 recites the limitations "the ampere-turns values" in claim lines 18 and "the position" in claim line 16. There is insufficient antecedent basis for these limitations in the claim.

11. Claim 37 recites the limitation "the axes" in claim line 2. There is insufficient antecedent basis for these limitations in the claim.

**12. Applicant is requested to review the numerous indefinite limitations above as well as other indefinite limitations throughout the claims.**

***Claim Rejections - 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 22-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Wicklow et al. (US 6515478).

15. Addressing claim 22, Wicklow discloses a method of operating a magnetic resonance apparatus in which magnetic gradient coils are used to generate one or more magnetic field gradients in a working volume so as to define regions from which magnetic resonance signals are obtained in use from a target material (see col. 1 lines 5-15 and col. 2 lines 15-47); characterized in that, a set of at least two magnetic gradient coils are provided for producing the magnetic field gradient in a particular direction, and in that, for each of the defined regions, the one or more magnetic field gradients are controlled in accordance with the position of the said region with respect to the gradient coils by controlling the ampere-turns values within the at least two coils of the set independently, so as to apply one or more magnetic field gradients of predetermined uniformity within the region (see figs. 1-2, col. 2 lines 15-65, col. 5 lines 47-67, and col. 6 lines 49-67).

16. Addressing claims 23-29, Wicklow discloses operating gradients in regions within a target volume being imaged by the MRI, varying and controlling the gradients with the

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regions, wherein the working volume is arranged to one side of the coils, wherein the region comprises planar slices, wherein the regions are arranged along a Z axis defining the magnetic field direction of the magnetic resonance apparatus, and wherein, within a particular region, the magnetic field gradients are controlled along an X axis and/or a Y axis, the X and Y axes being substantially orthogonal to the Z axis (see col. 2 lines 15-65, col. 5 lines 47-67, col. 6 lines 7-27, and col. 6 lines 49-55).

17. Addressing claims 30-33, Wicklow discloses the generating gradients in different directions such as x, y, and z, and describing each gradient's components and how the gradient relates to the magnetic field using equations that read on the equations as set forth in the instant claims (see col. 3 line 37-col. 4 line 65).

18. Addressing claims 34-35 and 40, Wicklow discloses a magnetic resonance apparatus comprising: a magnet system for generating a magnetic field in a working volume (see fig. 1); magnetic gradient coils for generating one or more magnetic field gradients in the working volume so as to define regions from which magnetic resonance signals are obtained from a target material (see (10) in fig. 1); and a controller for operating the magnetic gradient coils in use so as to apply one or more magnetic field gradients within each region (see col. 6 lines 7-27), characterized in that the magnetic gradient coils comprise a set of at least two magnetic gradient coils for producing the magnetic field gradient in a first direction (see col. 6 lines 49-67), and in that, for each of the defined regions, the controller is further adapted in use to control the one or more

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magnetic field gradients in accordance with the position of the said region with respect to the magnetic gradient coils by controlling the ampere-turns values within the at least two magnetic gradient coils of the set independently in two directions, such that the one or more magnetic field gradients have a predetermined uniformity within the region (see figs. 1-2, col. 2 lines 15-65, col. 5 lines 47-67, and col. 6 lines 49-67), further comprising a controllable current supply for providing current independently to the at least two magnetic gradient coils within each coil set (see col. 6 lines 7-27).

19. Addressing claims 36-39, Wicklow discloses wherein the working volume is arranged to one side of the coils comprising the magnetic resonance apparatus, and wherein the regions are arranged in the working volume (see fig. 1 and col. 5 lines 31-46), wherein the axes for the gradient coils are each arranged along a common direction, arranged coaxially (see col. 5 lines 47-67), wherein the set comprises at least 3 independently controllable Z gradient coils (see col. 5 lines 47-67 and col. 6 lines 49-67).

20. Claims 22 and 34 are also rejected under 35 U.S.C. 102(b) as being anticipated by Morich et al. (US 2002/0171424).

21. Addressing claims 22 and 34, Morich discloses a method of operating a magnetic resonance apparatus in which magnetic gradient coils are used to generate one or more magnetic field gradients in a working volume (see para 13) so as to define regions from

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which magnetic resonance signals are obtained in use from a target material (see paras 13 and 35); characterized in that, a set of at least two magnetic gradient coils are provided for producing the magnetic field gradient in a particular direction (see para 35), and in that, for each of the defined regions, the one or more magnetic field gradients are controlled in accordance with the position of the said region with respect to the gradient coils by controlling the ampere-turns values within the at least two coils of the set independently, so as to apply one or more magnetic field gradients of predetermined uniformity within the region (see paras 35-39). Morich discloses an apparatus for implementing the above method (see fig. 1).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NIGEL FONTENOT whose telephone number is (571)270-7032. The examiner can normally be reached on Monday-Friday (7:00a-4:00p).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. F./

Examiner, Art Unit 3768

/Long V Le/

Supervisory Patent Examiner, Art Unit 3768